

**Appendix: Claims On Appeal**

1. (Three Times Amended) An isolated or purified nucleic acid segment comprising a nucleic acid sequence encoding a 3-keto-acyl-CoA reductase protein, wherein the nucleic acid sequence is a nucleic acid sequence at least about 80% identical to SEQ ID NO:8 that hybridizes under stringent conditions to SEQ ID NO:8 or the complement thereof, and encodes a protein at least about 80% identical to SEQ ID NO:9, and has 3-keto-acyl-CoA reductase activity higher for D-isomers of C6 carbon chains than for C4 carbon chains.

2. (Amended) A recombinant vector comprising in the 5' to 3' direction:

- a) a promoter that directs transcription of a structural nucleic acid sequence encoding a 3-keto-acyl-CoA reductase protein;
- b) a structural nucleic acid sequence encoding a 3-keto-acyl-CoA reductase protein; wherein the structural nucleic acid sequence is a nucleic acid sequence at least about 80% identical to SEQ ID NO:8; that hybridizes under stringent conditions to SEQ ID NO:8 or the complement thereof; and encodes a protein at least about 80% identical to SEQ ID NO:9 and that has 3-keto-acyl-CoA reductase activity higher for D-isomers of C6 carbon chains than for C4 carbon chains; and
- c) a 3' transcription terminator.

3. (Amended) A recombinant cell comprising a nucleic acid segment encoding a 3-keto-acyl-CoA reductase protein, wherein the nucleic acid segment is a nucleic acid sequence at least

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about 80% identical to SEQ ID NO:8; that hybridizes under stringent conditions to SEQ ID NO:8 or the complement thereof; and

encodes a protein at least about 80% identical to SEQ ID NO:9 and that has 3-keto-acyl-CoA reductase activity higher for D-isomers of C6 carbon chains than for C4 carbon chains.

4 5. (Amended) A genetically transformed plant cell comprising in the 5' to 3' direction:

a) a promoter that directs transcription of a structural nucleic acid sequence encoding a 3-keto-acyl-CoA reductase protein;  
wherein the structural nucleic acid sequence is a nucleic acid sequence at least about 80% identical to SEQ ID NO:8 that hybridizes under stringent conditions to SEQ ID NO:8 or the complement thereof; and

encodes a protein at least about 80% identical to SEQ ID NO:9 and that has 3-keto-acyl-CoA reductase activity higher for D-isomers of C6 carbon chains than for C4 carbon chains;

c) a 3' transcription terminator; and  
d) a 3' polyadenylation signal sequence that directs the addition of polyadenylate nucleotides to the 3' end of RNA transcribed from the structural nucleic acid sequence.

5 6. (Amended) A genetically transformed plant comprising in the 5' to 3' direction:

a) a promoter that directs transcription of a structural nucleic acid sequence encoding a 3-keto-acyl-CoA reductase protein;  
wherein the structural nucleic acid sequence is a nucleic acid sequence at least about 80%

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identical to SEQ ID NO:8 that hybridizes under stringent conditions to SEQ ID NO:8 or the complement thereof; and

encodes a protein at least about 80% identical to SEQ ID NO:9 and that has 3-keto-acyl-CoA reductase activity higher for D-isomers of C6 carbon chains than for C4 carbon chains;

- c) a 3' transcription terminator; and
- d) a 3' polyadenylation signal sequence that directs the addition of polyadenylate

nucleotides to the 3' end of RNA transcribed from the structural nucleic acid sequence.

*6* 9. (Twice Amended) An isolated or purified nucleic acid segment comprising a nucleic acid sequence encoding a polyhydroxyalkanoate synthase protein, wherein the nucleic acid segment is a nucleic acid sequence at least about 80% identical to SEQ ID NO:10 that hybridizes under stringent conditions to SEQ ID NO:10 or the complement thereof; and

encodes a protein at least about 80% identical to SEQ ID NO:11 and that has polyhydroxyalkanoate synthase activity.

*7* 11. (Amended) A recombinant vector comprising in the 5' to 3' direction:

- a) a promoter that directs transcription of a structural nucleic acid sequence encoding a polyhydroxyalkanoate synthase protein;
- b) a structural nucleic acid sequence encoding a polyhydroxyalkanoate synthase protein; wherein the structural nucleic acid sequence is a nucleic acid sequence at least about 80% identical to SEQ ID NO:10 that hybridizes under stringent conditions to SEQ ID NO:10 or the complement thereof; and

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encodes a protein at least about 80% identical to SEQ ID NO:11 and that has polyhydroxyalkanoate synthase activity; and

- c) a 3' transcription terminator.

8 12. (Amended) A recombinant host cell comprising a nucleic acid segment encoding a polyhydroxyalkanoate synthase protein, wherein the nucleic acid segment is a nucleic acid sequence at least about 80% identical to SEQ ID NO:10 that hybridizes under stringent conditions to SEQ ID NO:10 or the complement thereof; and

encodes a protein at least about 80% identical to SEQ ID NO:11 and that has polyhydroxyalkanoate synthase activity.

9 13. (Amended) A genetically transformed plant cell comprising in the 5' to 3' direction:

- a) a promoter that directs transcription of a structural nucleic acid sequence encoding a polyhydroxyalkanoate synthase protein;
- b) a structural nucleic acid sequence encoding a polyhydroxyalkanoate synthase protein; wherein the structural nucleic acid sequence is a nucleic acid sequence at least about 80% identical to SEQ ID NO:10 that hybridizes under stringent conditions to SEQ ID NO:10 or the complement thereof; and

encodes a protein at least about 80% identical to SEQ ID NO:11 and that has polyhydroxyalkanoate synthase activity;

- c) a 3' transcription terminator; and
- d) a 3' polyadenylation signal sequence that directs the addition of polyadenylate nucleotides to the 3' end of RNA transcribed from the structural nucleic acid sequence.

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- 10 14. (Amended) A genetically transformed plant comprising in the 5' to 3' direction:  
a) a promoter that directs transcription of a structural nucleic acid sequence  
encoding a polyhydroxyalkanoate synthase protein;  
b) a structural nucleic acid sequence encoding a polyhydroxyalkanoate synthase  
protein; wherein the structural nucleic acid sequence is a nucleic acid sequence at least about  
80% identical to SEQ ID NO:10 that hybridizes under stringent conditions to SEQ ID NO:10 or  
the complement thereof; and  
encodes a protein at least about 80% identical to SEQ ID NO:11 and that has  
polyhydroxyalkanoate synthase activity;
- c) a 3' transcription terminator; and  
d) a 3' polyadenylation signal sequence that directs the addition of polyadenylate  
nucleotides to the 3' end of RNA transcribed from the structural nucleic acid sequence.

11 24. (Amended) The nucleic acid segment, vector, or cell of claims 1, ~~4, 5,~~ or ~~6,~~  
wherein the nucleic acid sequence is SEQ ID NO:8.

12 25. The nucleic acid segment, vector or cell of claims ~~9, 11, 12, 13,~~ or ~~14~~ wherein the  
nucleic acid sequence is SEQ ID NO:10.